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MOTOROLA, INC.
1303 EAST ALGONQUIN ROAD
IL01/3RD
SCHAUMBURG, IL 60196

EXAMINER

KUMAR, PANKAJ

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/068,643	HAMIED ET AL.	
	Examiner	Art Unit	
	Pankaj Kumar	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/5/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9-13,16,17,19,22 and 23 is/are rejected.
- 7) ☒ Claim(s) 2,3,7,8,14,15,18,20,21 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it should not contain the title of the invention. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claims 2, 3, 7, 8, 14, 15, 17, 18, 20, 21, 23, 24 are objected to because of the following informalities: all of the variables in the formulas have to be defined in the claims. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 16, 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawaguchi USPN 6,873,835. Here is how the reference teaches the claims:
5. As per claim 16: A method of operating a transceiver including one or more transmitter antennas, one or more receiver antennas, and one or more propagation channels between the one or more transmitter antennas and the one or more receiver antenna, said method comprising: computing a vector norm for each receiver antenna of the one or more receiver antennas

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(Kawaguchi col. 3 lines 17-28; amplitude is a vector norm since the amplitude is of the receive direction (vector) and one amplitude is being compared with the other amplitude or the norm); selecting a first antenna of the one or more receiver antennas having a largest vector norm to receive at least one complex value symbol from the one or more transmitter antennas

(Kawaguchi fig. 1: TX, I, Q, 10, 11; col. 3 lines 17-28).

6. As per claim 22. A transceiver, comprising: one or more transmitter antennas (Kawaguchi fig. 1: 10, 11, TX); one or more receiver antennas (Kawaguchi fig. 1: 10, 11, RX); one or more propagation channels between said one or more transmitter antennas and said one or more receiver antenna (Kawaguchi fig. 1: free space between antennas; col. 1 lines 10-20 RF, mobile, wireless); and a module operable to compute a vector norm for each receiver antenna of said one or more receiver antennas (Kawaguchi col. 3 lines 17-28; amplitude is a vector norm since the amplitude is of the receive direction (vector) and one amplitude is being compared with the other amplitude or the norm), said module further operable to select a first antenna of said one or more antennas having a largest vector norm to receive at least one complex value symbol from said one or more transmitter antennas (Kawaguchi fig. 1: TX, I, Q, 10, 11; col. 3 lines 17-28).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boren USPN 5,226,057. Here is how the reference teaches the claims:

9. As per claim 1: A method of operating a transceiver including one or more transmitter antennas, at least one receiver antenna, and one or more propagation channels between the one or more transmitter antennas and the one or more receiver antennas, said method comprising: receiving a binary stream (Boren fig. 1: output of 17 has binary bits) assembled into groups of bits (Boren fig. 1 is designed to operate more than once and hence there will be groups of bits) forming symbol indices (not in Boren but would be obvious as explained below); and generating at least one complex symbol value (Boren fig. 1: I , Q) in response to a reception of the binary stream (Boren fig. 1: output of 17 has binary bits), each complex symbol value of the at least one complex symbol value being normalized over one or more channel coefficients (Boren fig. 1: I , Q are filtered in 25 and 35 with 33 in 31) associated with the one or more propagation channels (Boren the propagation of the signals through the channel(s) in fig. 1).

10. Boren does not teach forming symbol indices as claimed. Boren does teach forming symbol indices later in fig. 1 with $x_1(n)$, $y_1(n)$, $x_j(n)$, $y_j(n)$. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Boren with forming symbol indices as recited by the instant claims, because Boren suggests forming symbol indices later in fig. 1 and so it would be advantageous for it form it after a/d in 17 in order to be able to keep track of the data in the analogous art of data.

11. The limitations in the preamble which are not the same as the ones in the body are not afforded patentable weight since these recitations occur in the preamble and recite the intended

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use of a structure and the body of the claim does not depend on the preamble for completeness and the bodily limitations are able to stand alone.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boren as applied to claim 1 above, and further in view of Hiramatsu USPN 6,600,933. Here is how the references teach the claims:

13. As per claim 4, Boren teaches the method of claim 1. Boren does not teach selecting a first receiver antenna of the one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna. Hiramatsu teaches selecting a first receiver antenna of the one or more receiver antennas (Hiramatsu fig. 8: antennas 1 and 2) as a function of a metric proportional to an average injection power corresponding to the first receiver antenna (Hiramatsu fig. 10: 1003; fig. 11: 1103, 1104, 1105); and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna (Hiramatsu figs. 10, 11: transmission power control signal; fig. 8: 810, 813; fig. 9: 905; figs. 3, 4, 5, 9, 10: complex; col. 1 lines 35-37).

Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the selecting a first receiver antenna of the one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna as recited by the instant claims, because the combined teaching of Boren with Hiramatsu suggest selecting a first receiver antenna of the one

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or more receiver antennas as a function of a metric proportional to an average injection power corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Boren with Hiramatsu because Boren suggests communication (something broad) in general and Hiramatsu suggests the beneficial use of transmitting to the strong receiver so that the receiver can receive it in the analogous art of communication.

14. Claims 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boren as applied to claim 1 above, and further in view of Kawaguchi USPN 6,873,835. Here is how the references teach the claims:

15. As per claim 4, Boren teaches the method of claim 1. Boren does not teach selecting a first receiver antenna of the one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna. Kawaguchi teaches selecting a first receiver antenna of the one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to the first receiver antenna (Kawaguchi col. 3 lines 17-28); and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna (Kawaguchi fig. 1: TX, I, Q, 10, 11). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the selecting a first receiver antenna of the one or more receiver antennas as a function of a metric proportional to an average injection

power corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna as recited by the instant claims, because the combined teaching of Boren with Kawaguchi suggest selecting a first receiver antenna of the one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Boren with Kawaguchi because Boren suggests communication (something broad) in general and Kawaguchi suggests the beneficial use of communication with selection of receive antenna as a function of power and transmitting to the selected receive antenna such as transmitting to the strong receiver so that the receiver can receive it in the analogous art of communication.

16. As per claim 5: Boren teaches the method of claim 1. Boren does not teach selecting a first receiver antenna of the one or more receiver antennas as a function of a vector norm corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna. Kawaguchi teaches selecting a first receiver antenna of the one or more receiver antennas as a function of a vector norm corresponding to the first receiver antenna (Kawaguchi col. 3 lines 17-28); and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna (Kawaguchi fig. 1: TX, I, Q, 10, 11).

17. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the selecting a first receiver antenna of the one or more receiver antennas

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as a function of a vector norm corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna as recited by the instant claims, because the combined teaching of Boren with Kawaguchi suggest selecting a first receiver antenna of the one or more receiver antennas as a function of a vector norm corresponding to the first receiver antenna; and transmitting the at least one complex symbol value from the one or more transmitter antennas to the first receiver antenna as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Boren with Kawaguchi because Boren suggests communication (something broad) in general and Kawaguchi suggests the beneficial use of communication with selection of receive antenna as a function of strength and transmitting to the selected receive antenna such as transmitting to the strong receiver so that the receiver can receive it in the analogous art of communication.

18. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu USPN 6,600,933 in view of Morris USPN 6,032,033. Here is how the references teach the claim:

19. As per claim 6: A transceiver, comprising: one or more transmitter antennas (Hiramatsu fig. 8: antennas 1, 2; transmission); one or more receiver antennas (Hiramatsu fig. 8: antennas 1, 2; reception); one or more propagation channels between said one or more transmitter antennas and said one or more receiver antenna (Hiramatsu figs. 8, 16: propagation channel over free space; col. 1 line 5: radio; col. 1 line 26: channels); and a transmitter operable to generate at least one complex symbol value (Hiramatsu fig. 10: 1001; fig. 11: 1101) in response to a reception of a binary stream assembled into groups of bits forming symbol indices (Hiramatsu fig. 14, 15:

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symbol; groups of bits for pilot, message, control, etc; these are groups of 0s and 1 or binary; fig. 10, 11: complex calculations based on reception; transmitter selects antenna in response to received magnitude), each complex symbol value of the at least one complex symbol value being normalized over one or more channel coefficients associated with said one or more propagation channels (not in Hiramatsu but would be obvious as explained below).

20. Hiramatsu does not teach each complex symbol value of the at least one complex symbol value being normalized over one or more channel coefficients associated with said one or more propagation channels. Morris 6032033 teaches each complex symbol value of the at least one complex symbol value (Morris fig. 3: I, Q) being normalized over one or more channel coefficients associated with said one or more propagation channels (Morris fig. 3: slicer 230 has channel filter coefficients over which the noise is removed and the signal normalizes). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the each complex symbol value of the at least one complex symbol value being normalized over one or more channel coefficients associated with said one or more propagation channels as recited by the instant claims, because the combined teaching of Hiramatsu with Morris suggest each complex symbol value of the at least one complex symbol value being normalized over one or more channel coefficients associated with said one or more propagation channels as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Hiramatsu with Morris because Hiramatsu suggests complex data (Hiramatsu fig. 5) (something broad) in general and Morris suggests the beneficial use of filtering in the environment of complex data such as to remove noise in the analogous art of increasing signal quality.

21. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu in view of Morris as applied to claim 6 above, and further in view of Kawaguchi.

22. As per claim 9, Hiramatsu in view of Morris teach the transceiver of claim 6. Hiramatsu in view of Morris does not teach wherein said transmitter is further operable to select a first receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection power of corresponding to said first receiver antenna; and said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna. Kawaguchi teaches wherein said transmitter is further operable to select a first receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection power of corresponding to said first receiver antenna (Kawaguchi col. 3 lines 17-28; Kawaguchi is a transceiver and accordingly it is a transmitter); and said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna (Kawaguchi fig. 1: TX, I, Q, 10, 11).

23. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the said transmitter is further operable to select a first receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection power of corresponding to said first receiver antenna; and said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims, because the combined teaching of Hiramatsu in view of Morris with Kawaguchi suggest said transmitter is further operable to select a first receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection

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power of corresponding to said first receiver antenna; and said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Hiramatsu in view of Morris with Kawaguchi because Hiramatsu in view of Morris suggests multiple antennas with transmission and reception (something broad) in general and Kawaguchi suggests the beneficial use of communication with selection of receive antenna as a function of power and transmitting to the selected receive antenna such as transmitting to the strong receiver so that the receiver can receive it in the analogous art of communication.

24. As per claim 10, Hiramatsu in view of Morris teach the transceiver of claim 6. Hiramatsu in view of Morris does not teach a receiver operable to select a first receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to said first receiver antenna, wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna. Kawaguchi teaches a receiver operable to select a first receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to said first receiver antenna (Kawaguchi col. 3 lines 17-28; Kawaguchi is a transceiver and accordingly it is a receiver), wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna (Kawaguchi fig. 1: TX, I, Q, 10, 11). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the receiver operable to select a first

receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to said first receiver antenna, wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims, because the combined teaching of Hiramatsu in view of Morris with Kawaguchi suggest receiver operable to select a first receiver antenna of said one or more receiver antennas as a function of a metric proportional to an average injection power corresponding to said first receiver antenna, wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Hiramatsu in view of Morris with Kawaguchi because Hiramatsu in view of Morris suggests multiple antennas with transmission and reception (something broad) in general and Kawaguchi suggests the beneficial use of communication with selection of receive antenna as a function of power and transmitting to the selected receive antenna such as transmitting to the strong receiver so that the receiver can receive it in the analogous art of communication.

25. As per claim 11, Hiramatsu in view of Morris teach the transceiver of claim 6. Hiramatsu in view of Morris does not teach wherein said transmitter is further operable to select a first receiver antenna of said one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna; and said one or more transmitter antennas are operable to transmit the at least one complex symbol value to said first receiver antenna. Kawaguchi teaches said transmitter is further operable to select a first receiver antenna of said

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one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna (Kawaguchi col. 3 lines 17-28; amplitude is a vector norm since the amplitude is of the receive direction (vector) and one amplitude is being compared with the other amplitude or the norm; Kawaguchi is a transceiver and accordingly it is a receiver); and said one or more transmitter antennas are operable to transmit the at least one complex symbol value to said first receiver antenna (Kawaguchi fig. 1: TX, I, Q, 10, 11). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the said transmitter is further operable to select a first receiver antenna of said one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna; and said one or more transmitter antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims, because the combined teaching of Hiramatsu in view of Morris with Kawaguchi suggest said transmitter is further operable to select a first receiver antenna of said one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna; and said one or more transmitter antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Hiramatsu in view of Morris with Kawaguchi because Hiramatsu in view of Morris suggests multiple antennas with transmission and reception (something broad) in general and Kawaguchi suggests the beneficial use of communication with selection of receive antenna as a function of power and transmitting to the selected receive antenna such as transmitting to the strong receiver so that the receiver can receive it in the analogous art of communication.

26. As per claim 12, Hiramatsu in view of Morris teach the transceiver of claim 6. Hiramatsu in view of Morris does not teach a receiver operable to select a first receiver antenna of said one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna, wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna. Kawaguchi teaches a receiver operable to select a first receiver antenna of said one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna (Kawaguchi col. 3 lines 17-28; amplitude is a vector norm since the amplitude is of the receive direction (vector) and one amplitude is being compared with the other amplitude or the norm; Kawaguchi is a transceiver and accordingly it is a receiver), wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna (Kawaguchi fig. 1: TX, I, Q, 10, 11) Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the a receiver operable to select a first receiver antenna of said one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna, wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims, because the combined teaching of Hiramatsu in view of Morris with Kawaguchi suggest a receiver operable to select a first receiver antenna of said one or more receiver antennas as a function of a vector norm corresponding to said first receiver antenna, wherein said one or more transmitting antennas are operable to transmit the at least one complex symbol value to said first receiver antenna as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been

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motivated to combine the teachings of Hiramatsu in view of Morris with Kawaguchi because Hiramatsu in view of Morris suggests multiple antennas with transmission and reception (something broad) in general and Kawaguchi suggests the beneficial use of communication with selection of receive antenna as a function of power and transmitting to the selected receive antenna such as transmitting to the strong receiver so that the receiver can receive it in the analogous art of communication.

27. Claims 13, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi in view of Morris. Here is how the references teach the claims:

28. As per claim 13: A method of operating a transceiver including one or more transmitter antennas, one or more receiver antennas, and one or more propagation channels between the one or more transmitter antennas and the one or more receiver antenna, said method comprising: computing a metric proportional to an average injection power for each receiver antenna of the one or more receiver antennas (Kawaguchi col. 3 lines 17-28); selecting a first antenna of the one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from the one or more transmitter antennas (Kawaguchi fig. 1: TX, I, Q, 10, 11; col. 3 lines 17-28; initial antenna selected could have small average injection power and thus when the system realizes this, it would switch antennas; if this is not sufficient, then it would be obvious for Kawaguchi to teach it as explained below).

29. If Kawaguchi does not teach said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas, then Morris 6032033 teaches

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said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas (Morris fig. 6; col. 1 line 62 to col. 2 line 3; one antenna is selected and it may receive a low or high signal level but it will always be compared with a second antenna selected to see which antenna to use.). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas as recited by the instant claims, because the combined teaching of Kawaguchi with Morris suggest said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Kawaguchi with Morris because Kawaguchi suggests multiple antennas (something broad) in general and Morris suggests the beneficial use of selecting a low power antenna so that it can be compared with high power antenna so that a proper antenna choice can be made in the analogous art of communications.

30. As per claim 19: A transceiver, comprising: one or more transmitter antennas (Kawaguchi fig. 1: 10, 11, TX); one or more receiver antennas (Kawaguchi fig. 1: 10, 11, RX); one or more propagation channels between said one or more transmitter antennas and said one or more receiver antenna (Kawaguchi fig. 1: free space between antennas; col. 1 lines 10-20 RF,

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mobile, wireless); and a module operable to compute a metric proportional to an average injection power for each receiver antenna of said one or more receiver antennas (Kawaguchi col. 3 lines 17-26), said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas (Kawaguchi fig. 1: TX, I, Q, 10, 11; col. 3 lines 17 28; initial antenna selected could have small average injection power and thus when the system realizes this, it would switch antennas; if this is not sufficient, then it would be obvious for Kawaguchi to teach it as explained below).

31. If Kawaguchi does not teach said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas, then Morris 6032033 teaches said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas (Morris fig. 6; col. 1 line 62 to col. 2 line 3; one antenna is selected and it may receive a low or high signal level but it will always be compared with a second antenna selected to see which antenna to use.)

32. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection power to receive at least one complex value symbol from said one or more transmitter antennas as recited by the instant claims, because the combined teaching of Kawaguchi with Morris suggest said module further operable to select a first antenna of said one or more receiver antennas having a smallest average injection

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power to receive at least one complex value symbol from said one or more transmitter antennas as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Kawaguchi with Morris because Kawaguchi suggests multiple antennas (something broad) in general and Morris suggests the beneficial use of selecting a low power antenna so that it can be compared with high power antenna so that a proper antenna choice can be made in the analogous art of communications.

33. Claims 17, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi in view of Dehghan USPN 6,782,043. Here is how the references teach the claims:

34. As per claims 17 and 23, Kawaguchi does not teach the formula. Dehghan teaches the formula in col. 4 eq. 9, col. 5 eq. 10, 11. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the formula as recited by the instant claims, because the combined teaching of Kawaguchi with Dehghan suggest the formula as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Kawaguchi with Dehghan because Kawaguchi suggests calculations (something broad) in general and Dehghan suggests the beneficial use of the formula such as to estimate as taught in Dehghan in the analogous art of calculations.

Allowable Subject Matter

35. Claims 2, 3, 7, 8, 14, 15, 18, 20, 21, 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Pankaj Kumar
Patent Examiner
Art Unit 2631

PK